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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/070,110	02/28/2002	Hiroyasu Nishida	1217-020321	9550

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EXAMINER	
DICUS, TAMRA	
ART UNIT	**PAPER NUMBER**
1774	

DATE MAILED: 05/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/070,110	NISHIDA ET AL.
	Examiner	Art Unit
	Tamra L. Dicus	1774

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *8-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *8-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Cancellation of claims 1-7 is acknowledged. The 112 rejection is withdrawn because Applicant cancelled claim 7.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 8 and 10-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 6,342,293 to Nakahara et al.

Nakahara teaches an alumina hydrate as sol particles and an acid-containing water as a medium, and which is characterized in that an alumina hydrate powder obtainable by removing water from the alumina sol, has an average pore radius of at least 7 nm and a total volume of pores having pore radii of from 1 to 100 nm of from 0.80 to 2.00 cc/g (falling within Applicant's claimed range of particle diameter from 0.02 to 0.2 microns and total pore volume of 0.5-1.5 ml/g and volume of pores diameter from 15-30 nm ranging from 0.3-1 ml/g). See col. 2, lines 40-55, col. 6, lines 46-58, and col. 7, lines 35-47. Alumina hydrate particles have at most 0.7 microns, meeting Applicant's range 0.02-0.2 microns (see col. 4, lines 67-68). Instant claims 8 and 10 are met. Nakahara further teaches an alumina hydrate powder consisting essentially of an acid-containing alumina hydrate having a sol concentration of 0.5 wt % obtained by dispersing the alumina hydrate powder in water, which is from 5 to 70%. (Meeting the Al_2O_3 concentration of 20% by weight limitation, of instant claim 11-13). See col. 2, lines

40-50 and col. 6, lines 35-40. The alumina hydrate of Nakahara results in the general formula of instant claims 8, 10, 11, and 15. While Nakahara does not teach the absorbance of 2.0 or less or viscosity of 50-2000 cP, because Nakahara teaches the Al2O3 falls within the same concentration range of Applicant, such properties are therefore present and inherent.

Regarding claim 14, Nakahara teaches a coating of the alumina hydrate as described above, is dried and forms an ink-receiving layer at col. 6, lines 25-35, equivalent to a coating liquid. Within the aforesaid citing, Nakahara further teaches the ink receiving layer is on a substrate to produce a recording medium (regarding instant claim 15). See also col. 12, lines 9-20 teaching the coating fluid dried on an ink receiving medium and substrate for a recording medium that provides good ink absorptivity.

Nakahara does not expressly disclose the alumina hydrate with the respective mol ranges as per instant claim 8. However, it would have been obvious to one of ordinary skill in the art to modify the alumina hydrate of Nakahara to include ammonia to result in the general formula of alumina hydrate because the mol range of ammonia is optimizable since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272. The amount of mols of either the water, ammonia, or alkali metal effects the viscosity.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 6,342,293 to Nakahara et al. in view of USPN 4,371,513 to Sanchez et al.

Nakahara teaches an alumina sol and hydrate powder and the processes for their production. Regarding claim 9, at col. 3, line 47 – col. 4, line 8, Nakahara describes the pH in the aggregation treatment is form 7 to 12 (neutralizing step). Nakahara adds an alkali to adjust

the pH of the alumina hydrate dispersion to the above range. The alkali to be added, is an alkali metal hydroxide, an alkaline earth metal hydroxide, ammonia, an amine or a quarternary ammonium hydroxide, or an alkali containing aluminum, such as an alkali metal aluminate, may also be used. The temperature for the aggregation treatment is preferably from 50 to 150 degrees C (meeting Applicant's range from 50 to 105 degrees C). Nakahara explains the higher the temperature, the shorter the time for adequate progress in crystal growth and aggregation of the alumina hydrate particles and the larger the pore size and pore volume become. In Example 1, acetic acid was added to this dispersion. The dispersion forms a powder, and thereby teaches the dispersion was dried (see col. 11, lines 1-25). Nakahara does not teach filtering and washing the alumina hydrogel with water. However, Sanchez teaches an alumina slurry is filtered and washed with deionized water to remove impurities (col. 9, lines 35-40). It would have been obvious to one of ordinary skill in the art to modify Nakahara to include a filtration and washing step because Sanchez teaches the filtering and washing are conventional as shown by Sanchez at col. 9, lines 25-40 to remove impurities.

Nakahara does not expressly disclose the alumina hydrate forms an alumina hydrogel as recited per instant claim 9. Nakahara, however, does explain at col. 3, lines 30-35 the formation of an alumina xerogel. See also col. 2, lines 50-68 including a xerogel (inclusive of an alumina hydrogel).

Claims 8, 10-11, and 15 are rejected under 35 U.S.C. 103(a) as obvious over EP 0 934 905 to Asaoka et al. in view of USPN 4,371,513 to Sanchez et al.

3. Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

Asaoka teaches alumina hydrate powder having pore volumes from 0.8-0.70, falling within Applicant's claimed range of particle diameter from 0.02 to .2 microns. Pore radius ranges from 94-112 cc/g and the volume of pores having radii not exceeding 50 Angstrom, is from 0.02-0.11 cc/g (falling within Applicant's claimed range of particle diameter from 0.02 to .2 microns and total pore volume of 0.5-1.5 ml/g and volume of pores diameter from 15-30 nm ranging from 0.3-1 ml/g) in Table 1. The alumina hydrate general formula of instant claims 8, 10, 11, and 15 of Asaoka is at [0025]. Asaoka at [0034] teaches a recording medium produced from a coating liquid comprising the alumina hydrate to form an ink-receiving layer (instant claims 11 and 15).

Asaoka does not teach the ammonia and alkali metal included in the production of alumina hydrate or the respective mol ranges. However, Sanchez teaches alumina compositions. Ammonia is added to the alumina particles at col. 5, lines 60-65 for producing spherical alumina particles. See also col. 3, lines 60-65. The ammonia concentration in the aqueous phase may be about 0.5 to 28.4 weight percent at col. 19, lines 14-15. See also col. 17, line 54- col. 18, line 15 teaching the ammonia additions and effects for producing spherical particles. Sanchez also teaches the mol ratio of alkali metal to alumina is varied dependent upon the impurity level of the alumina at col. 6, lines 53-68. It would have been obvious to one of ordinary skill in the art to modify the alumina hydrate of Asaoka to include ammonia to result in the general formula of alumina hydrate because Sanchez teaches reacting ammonia

with alumina particles produces spherical particles as cited above. The mol range is optimizable since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272. The amount of mols effects the spherical shape of the particles. Also, the mol range of water, ammonia, and alkali metal effects the viscosity. Sanchez teaches alumina is combined with an alkali metal at col. 6, lines 39-45. Sanchez teaches the mol ratio of alkali metal to alumina is varied dependent upon the impurity level of the alumina at col. 6, lines 53-68. It would have been obvious to one of ordinary skill in the art to modify the alumina hydrate of Asaoka to include an alkali metal to result in the general formula of alumina hydrate because Sanchez teaches alkali metals are introduced to effect the impurity level of the alumina particles as cited above.

Response to Arguments

Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

Nakahara is still used to teach alumina hydrate and it's process including forming a hydrogel as set forth in the new rejection above. Applicant argues Nakahara not teaching or suggesting controlling a volume of pores whose diameter is from 15-30 nm to be 0.3-1.0 ml/g, because Applicant believes Nakahara is concerned only with the total volume of pores having radii of 1-100 nm. Applicant has not made a persuasive argument. The instant claims do not control anything. Further the references include the same diameter range of 1-100 nm and volume of 0.8 to 2.00 cc/g falling within Applicant's ranges at col. 2, line 45 of Nakahara. Applicant also argues a hydrogel is not formed. However, xerogel is a hydrogel as defined by Cabot Corporation in their glossary (reference included). Because Applicant has not defined "hydrogel" within the Specification, the Examiner applies the term as defined by the dictionary.

Applicant argues Nakahara cannot age and grow fine particles as the instant invention because Nakahara does not wash alumina hydrogel with water. However, this deficiency of Nakahara has been remedied now by Sanchez teaching this conventionality as set forth above.

Applicant argues Nakahara not teaching the amount of alkali metal, however, the 102 rejection has now been changed to a 103 rejection to teach the amount is optimizable as set forth above.

Applicant argues the the EP '905 does not indicate that ammonia would be an integral part of the alumina particles. However, Sanchez was used to teach ammonia as an integral part of alumina as col. 19, lines 14-15.

Applicant similarly argues controlling volume pore size with the EP '905 document. However, EP '905 explicitly teaches a suitable range which pore size and pore volume is taught. See Table 1 of EP '905.

Applicant also argues the EP '905 fails to disclose alumina hydrogel prepared by neutralizing an aqueous solution followed by washing with water. However, washing is conventionally shown by Sanchez at col. 9, lines 25-40.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tamra L. Dicus whose telephone number is 571-272-1519. The examiner can normally be reached on Monday-Friday, 7:00-4:30 p.m., alternate Fridays. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

May 20, 2004

[tld]

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